

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims:

1. (Currently Amended) A data duplication method which duplicates data being stored in a storage subsystem connected to a computer, wherein said computer includes a processor unit and a storing unit, and said storage subsystem includes a plurality of storage media managed as a plurality of volumes,

said method comprising:

a first storing step that causes said storing unit to store an identification information list indicative of identification information for identifying each of the plurality of volumes to be supplied to an application program which is processed by the computer,

a second storing step that causes said storing unit to store a first duplication definition information which stores identification information indicative of a copy origin volume and identification information indicative of a copy destination volume,

an identification information reading step which reads out from a the storing unit an the identification information list in which identification information of each of a plurality of storage media included in the storage subsystem is stored,

a first reading step which reads out from the storing unit, a first duplication definition information ~~which stores the identification information with respect to each of the plurality of storage media, and identification information of a copy destination storage medium of each of the plurality of storage media,~~

a first comparing step which compares the identification information list read out in the identification information reading step, and the first duplication definition information read out in the first reading step,

an addition step in which ~~if~~ when there exists first identification information that is stored in the identification information list but not stored in the first duplication definition information in the first comparing step, a copy destination ~~storage medium volume~~ of a ~~storage medium volume~~ identified by the first identification information is selected according to a predetermined selection condition, the first identification information and the identification information of the copy destination ~~storage medium volume~~ thus selected are added to the first duplication definition information, and data in the ~~storage medium volume~~ identified by the first identification information of the copy origin volume is copied to the copy destination ~~storage medium volume~~ thus selected, and

a deletion step in which ~~if~~ when there exists second identification information that is not stored in the identification information list but is stored in the first duplication definition information in the first comparing step, the second identification information and identification information of a copy destination ~~storage medium volume~~, which is a copy destination of a ~~storage medium volume~~ identified

by the second identification information, are deleted from the first duplication definition information, and copying the data of the ~~storage-medium-volume~~ identified by the second identification information is stopped.

2. (Currently Amended) The data duplication method according to claim 1, wherein, there exist a plurality of said storage subsystems connected to the computer, and a plurality of said storage subsystems which include said copy destination ~~storage-medium-volume~~.

3. (Currently Amended) The data duplication method according to claim 1, wherein, a second reading step which reads out from said storing unit, a second duplication definition information which stores identification information with respect to each of said plurality of ~~storage-media-volumes~~ as a copy destination, and identification information of a ~~storage-medium-volume~~ as a further copy destination of each of said ~~storage-media~~volumes,

a second comparing step which compares the first duplication definition information read out in said first reading step, and the second duplication definition information read out in said second reading step,

an addition step in which ~~if~~when there exists third identification information that is stored in the first duplication definition information but not stored in the second duplication definition information in the second comparing step, a further copy

destination ~~storage-medium-volume~~ of a ~~storage-medium-volume~~ identified by the third identification information is selected according to a predetermined selection condition, the third identification information and identification information of the further copy destination ~~storage-medium-volume~~ thus selected are added to the second duplication definition information, and data in the ~~storage-medium-volume~~ identified by the third identification information is copied to the further copy destination ~~storage-medium-volume~~ thus selected, and

a deletion step in which if when there exists fourth identification information that is not stored in the first duplication definition information but is stored in the second duplication definition information in the second comparing step, the fourth identification information and identification information of a further copy destination ~~storage-medium-volume~~, which is a further copy destination of a ~~storage-medium-volume~~ identified by the fourth identification information, are deleted from the second duplication definition information, and copying the data of the ~~storage-medium-volume~~ identified by the fourth identification information is stopped.

4. (Previously Presented) The data duplication method according to claim 1, wherein,

said selection condition includes information which has caused an error to occur in said addition step.

5. (Currently Amended) A program which duplicates data being stored in a storage subsystem connected to a computer, wherein said computer includes a processor unit and a storing unit, said storage subsystem includes a plurality of storage media managed as a plurality of volumes, and said program causes the processor unit to execute steps comprising:

_____ a first storing step that causes said storing unit to store therein an identification information list indicative of identification information for identifying each of the plurality of volumes to be supplied to an application program which is processed by the computer,

_____ a second storing step that causes said storing unit to store therein a first duplication definition information which stores identification information indicative of a copy origin volume and identification information indicative of a copy destination volume,

_____ an identification information reading step which reads out from ~~at the~~ storing unit ~~an the~~ identification information list which stores identification information of each of a plurality of storage media included in the storage subsystem,

_____ a definition information reading step which reads out from the storing unit, ~~the first duplication definition information which stores the identification information with respect to each of the plurality of storage media, and identification information of a copy destination storage medium of each of the plurality of storage media,~~

a comparing step which compares the identification information list read out in the identification information reading step, and the first duplication definition information read out in the duplication definition reading step,

an addition step in which if when there exists first identification information that is stored in the identification information list but not stored in the first duplication definition information in the comparing step, a copy destination ~~storage-medium volume~~ of a ~~storage-medium-volume~~ identified by the first identification information is selected according to a predetermined selection condition, the first identification information of the copy origin volume and the identification information of the copy destination ~~storage-medium-volume~~ thus selected are added to the first duplication definition information, and volume data in the ~~storage-medium~~ identified by the first identification information of the copy origin is copied to the copy destination ~~storage-medium-volume~~ thus selected, and

a deletion step in which if when there exists second identification information that is not stored in the identification information list but is stored in the first duplication definition information in the comparing step, the second identification information and identification information of a volume ~~copy destination storage medium~~, which is a copy destination of a ~~storage-medium-volume~~ identified by the second identification information, are deleted from the first duplication definition information, and copying the data of the ~~storage-medium-volume~~ identified by the second identification information is stopped.

6. (Currently Amended) A computer which duplicates data stored in a storage subsystem, comprising:

a first storing means which stores an identification information list in which identification information of each of a plurality of storage media included in said storage subsystem is stored,

a second storing means which stores duplication definition information including identification information with respect to each of said plurality of storage ~~media~~volumes of a copy origin, and identification information of a copy destination ~~storage medium volume~~of each of said storage mediavolumes, and

——a comparing means which compares the identification information list stored in said first storing means, and the duplication definition information stored in said second storing means, wherein,

when ~~if~~ there exists first identification information that is stored in said identification information list but not stored in said duplication definition information, said comparing means selects, according to a predetermined selection condition, a copy destination ~~storage medium volume~~of a storage medium volume identified by the first identification information, adds to said duplication definition information, the first identification information and the identification information of said copy destination ~~storage medium volume~~thus selected, and copies data in the storage ~~medium volume~~identified by the first identification information to said copy destination ~~storage medium volume~~thus selected, and

when if there exists second identification information that is not stored in said identification information list, but stored in said duplication definition information, said comparing means deletes, from said duplication definition information, the second identification information and identification information of a copy destination ~~storage medium~~volume, which is a copy destination of a ~~storage medium~~volume identified by the second identification information, and stops copying of data in the ~~storage medium~~volume identified by the second identification information.

7. (New) A method of managing duplicating of data which is stored in a storage subsystem which is connected to a computer, wherein the storage subsystem includes a first disk subsystem and a second disk subsystem connected to the first disk subsystem, and the computer includes a processing unit and a storing unit, the management method comprising:

a first storing step which stores disk subsystem configuration information in the storing unit, the information manages for managing a plurality of first volumes which is be supplied to an application operated on the computer as a virtual volume, among volumes of the first disk subsystem,

a second storing step which stores copy definition information in the storing unit, the copy definition information indicates correspondence between the first volume and a second volume being a copy destination of data which is stored in at least one of the first volume, among volumes of the second disk subsystem,

a comparing step which compares the disk subsystem configuration information with the copy definition information,

an addition step which adds information indicative of the first volume in the copy definition information, when information indicative of the first volume contained in the virtual volume is not contained in the copy definition information in the comparing step, and which adds information indicative of the second volume in the copy definition information as a copy destination of the data which is to be stored in the first volume to be added,

a deletion step which deletes the copy definition information relating to the first volume from the copy definition information, when the information indicating the first volume which is different from the first volume contained in the virtual volume is stored in the copy definition information in the comparing step.

8. (New) The method according to claim 7,

the first storing step further stores, as disk subsystem configuration information, information indicative of disk sub systems and information indicative of volume configuration of each of the disk sub systems, wherein

the adding step of adding the second volume to the copy definition information, further refers to the information indicative of the disk subsystem stored and information indicative of a volume configuration of the disk subsystem to determine whether there exists a candidate sub disk system for a copy destination, and when there exists a candidate sub disk system, further determines whether

there exists in the sub disk system candidate, a second volume that is not used yet and to which the first volume added to the copy definition information can be copied, and when there exists the second volume that can be copied, adds information indicative of the second volume to the copy definition information as a copy destination of the first volume which has been added to the copy definition information.

9. (New) The method according to claim 8, further carrying out:

a third storing step in which when the first volume being the copy origin for the duplicated data, is copied in the second volume being the copy destination and is further copied in a third volume being the copy destination in a third disk system, group related definition information is stored in the storing unit, the related definition information associates the first copy group information which is information indicative of correspondence between the first volume and the second volume with the second copy group information which is information indicative of correspondence between the second volume and the third volume;

determination step which determines whether there exist a related copy group by referring to the copy group related information after the adding step; and

setting step in which when there exist a related copy group, information indicative of the second volume being the copy destination of the first copy group is set as the copy original volume of the second copy group in the copy definition information.

10. (New) The method according to claim 8, further carrying out

a third storing step in which when the first volume being the copy origin for the duplicated data, is copied in the second volume being the copy destination and is further copied in a third volume being the copy destination in a third disk system, group related definition information is stored in the storing unit, the related definition information associates the first copy group information which is information indicative of correspondence between the first volume and the second volume with the second copy group information which is information indicative of correspondence between the second volume and the third volume;

a determination step of determining whether there exist a copy group which relates to the deleted copy definition information by referring to the copy group related information after the deletion step; and

a deletion step which deletes the second volume which is the copy destination volume of the first copy group and which is also the copy origin from the copy definition information, when there exist a related copy group in the copy group related information.